

gripping in a balanced manner facilitating application of force to the arrow shaft in line with an arrow shaft to be removed from a target material.

19. (Previously Presented) An arrow extractor as set forth in claim 18 in which the first and second arrow shaft grippers come into substantial contact with each other when the lever arms are brought to parallel position.

20. (Withdrawn) An arrow extractor as set forth in claim 18 in which the first and second arrow shaft grippers do not yet contact each other when the lever arms are brought to parallel position.

REMARKS

Applicant has, in response to the Examiner's rejection of application's claims amended such claims to avoid the prior art cited by the Examiner, and, it is believed, to better define the invention.

The Examiner has cited two references one of which he asserts either substantially teaches the invention or if combined would render the invention obvious. The Examiner relies in particular upon the Edson reference which discloses a paint tube opener including gripping handles with a central resiliently lined opening between jaw pieces. The Chiu reference shows a forked pivot used on a nutcracker.

Applicant has carefully designed his arrow gripper with considerable experimentation along the way for the extraction of arrows from targets and particularly hard plastic foam targets, although the arrow extractor of the invention works equally well with other target materials. Withdrawal from the usual hard plastic foam target has given considerable difficulty in the past, because, as explained in the application, arrows tend to freeze in such targets.

The finally attained tool has met with considerable success and in fact has never failed to extract an arrow or has damaged an arrow by its use. While the gripper of the invention is simple

and practical, it is extremely effective and, unlike previously known gripper and arrow extractors is invariably convenient and effective.

Two characteristics of the invention are particularly important in its success (a) it is designed to secure a superlative grip upon an arrow shaft without damaging the structure of the arrow shaft and (b) it has a design allowing a backward pull, preferably with one hand, to keep the pull aligned straight from the target surface at essentially a right angle with such surface or parallel to the arrow shaft (c) the grip with the arrow is sufficient to allow the arrow to be rotated in the target without damage to "break" whatever hold the target material has established with the arrow surface as a result of high speed impact into such target.

The Examiner has, as noted above, cited two references against Applicant's claims, namely the Edson reference which discloses a paint tube gripper for applying a sufficiently firm grip to an artist's tube of paint to be able to unscrew the cap, apparently with the other hand. As may be imagined in placing pressure on the sides of a paint tube, one must be careful to avoid squeezing the tube and possible breaking or rupturing it. This aim is accomplished in Edson, as clearly evident in Edson's drawings and description by having a rather thick resilient lining in the jaws of the paint tube gripper. This would not be effective in the Applicant's arrow gripper. Applicant notes that the discussion of Edson mentions that similar jar or jar top grippers have been used in the past, but that Edson has a thick gripping pad for cushioning the point tube. The Edson device would be completely unsuitable, therefore, for use on arrow as the Applicant uses his gripper. If the thick resilient pad of Edson was applied to the surface of an arrow it would, no doubt, not damage the arrow, but would also not be effective in extracting an arrow from a target. Instead the thick pad of Edson would tend to be disrupted or torn by either rotational or longitudinal force applied to the thick padding.

The Edson tube clasping design also does not have the ergonomic design of the Applicant's arrow extractor which design allows one hand to easily hold the gripping device in a central position or, if preferred, two hands to grip the device on opposite sides of the arrow so

that a straight pull rearwardly can be effected to pull the arrow straight from a target. If one were to try to pull an arrow with the Edson device, even if such device was equipped with a resilient lining of correct characteristics it would be well nigh impossible to apply a straight backward force with all the force applied from one side and the arrow would not only tend to bind in its pit in the target, but the arrow shaft, particularly if one of the modern high density arrows, might well be fractured or even completely snapped off.

The Chiu reference is a design patent showing a design for a nutcracker and was cited to show a fork type hinge at the end of the nutcracker, which is unlike the Edson reference which uses an external hinge. It is believed the Examiner realizes that Applicant does not wish to crack arrows and has apparently cited Chiu to show that a pivot type joint is known in the art, particularly where significant force is to be applied to joint. The fact that Edson's device is not designed for significant force to be applied to the device is, in fact, emphasized by the small hinge structure of Edson and the fact Edson proposes to make his holder out of plastic.

Applicant has amended his Claims 1, 6 and 14 by adding functional language indicating the characteristics of the gripping action which must be applied by the invention to an arrow in order to be effective, *i.e.* the grip must not be so severe or crushing in nature as to damage an arrow shaft, yet it must be sufficiently secure to effectively immovably bind the gripper to the arrow to enable such arrow to be twisted rotationally in one, and, preferably, both directions, to break temporary adhesion of the arrow surface with the material of the target and allow the arrow to be withdrawn by a force at right angles to the target. These requirements are provided essentially by not only the physical arrangement and structure of the gripper as explained above, but also by the characteristics of the resilient material. The two major requirements are that the jaws of the gripper not damage either the surface of the arrow or the physical structure of the arrow at all and that the grip be sufficiently firm to be able to rotate the arrow in at least one direction in the target to break it loose from the target material to which it may have adhered. If the combination of the jaws of the gripper and the resilient lining of such jaws is sufficient to

accomplish this, the gripper will be effective and if it is not, it will not be. This is all explained clearly in Applicant's specification and the functional language being added to the claims is therefore completely supported in the application.

In addition, of course, the particular structure of the gripper of the invention makes it particularly useful. For example, as explained in the application, the actual gripping elements have been found for best and most effective action and convenience to necessarily be not less than 2 inches in length or width (actual contact length with or along the arrow surface) and not more than five inches in length.

Meanwhile the best size for the lever arms is from 5 to 8 inches and the gripper should be attached to the lever arms not less than one quarter of this length lever arms from the hinge point nor preferably more than one third of such length, all as claimed in various of the dependent claims. See in particular dependent claims 5, 8, 12, 13, 15, 16 and 17. This allows the force to be applied to the arrow in both an effective and ergonomic manner as explained above.

As will be evident, the handles or hand grips of the device cannot be as wide of the actual gripping elements. A minimum length of gripper must be used, however, if an effective grip is to be attained in a small convenient tool. Thus, it is preferable for the gripping elements to be elongated tubular elements attached to the gripping handles. Furthermore, as explained it is also well for the actual gripping elements to be mounted at some distance from the actual gripper pivot, *i.e.* at least about one quarter of the distance along the lever arm from the pivot or preferably not more than one third of such distance.


This allows, if necessary, a two handed grip as shown in **FIG. 5** upon the pivoting handles, but, even more importantly, allows as shown in **FIG. 6** a one hand bracketing grip upon the arrow gripping device of the invention. These relationships are claimed in various of the dependent claims as noted above and are neither shown, suggested nor even hinted at by the cited references or any combination of the cited references.

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While the invention is admittedly simple in concept and operation, it is very sophisticated in its action and effectiveness and quite different from any of the arrow pullers of the prior art. It should be entitled, therefore, to claims equal in scope to the invention made.

A two-month extension is requested for response to the Official Action. Check No. 5621 in the amount of \$225.00 in payment of such extension is enclosed. If any additional fees are due, please charge against Deposit Account No. 15-0385.

Respectively submitted,


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